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10/001,265	11/21/2001	Qiushui Chen	2819.2005-000	8343

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EXAMINER

WOOD, KEVIN S

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 06/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/001,265

Applicant(s)

CHEN, QIUSHUI

Examiner

Kevin S Wood

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-14, 33-41, 44-46 and 53-57 is/are allowed.
- 6) ☒ Claim(s) 1-6, 15-26, 28-31, 42, 43 and 47-51 is/are rejected.
- 7) ☒ Claim(s) 27, 32 and 52 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: *Brian Healy*

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 15-19, 42, 43, and 47-49 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,529,325 to Kokkelink et al.

Referring to claims 1-3, Kokkelink et al. discloses all the limitations of the claimed invention. Kokkelink et al. discloses a polarization based optical splitter that includes: an input polarization maintaining fiber (32); at least two output polarization maintaining fibers (44,46); a multifaceted prism (14,16); a GRIN lens (42) positioned between the prism and the output fibers; a second lens (36) positioned between the input fiber and the prism to collimated the input light signal. See Fig. 1-3 and their respective portions of the specification.

Referring to claims 15-19, Kokkelink et al. discloses all the limitations of the claimed invention. Kokkelink et al. discloses a polarization based optical splitter that includes: an input polarization maintaining fiber (32); at least two output polarization maintaining fibers (44,46); a multifaceted prism (14,16); a GRIN lens (42) positioned

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between the prism and the output fibers; a second lens (36) positioned between the input fiber and the prism to collimated the input light signal. See Fig. 1-3 and their respective portions of the specification. The drawings appear to show that the angle of incidence is approximately 0 degrees.

Referring to claims 42, 43, and 47-49, Kokkelink et al. discloses all the limitations of the claimed method. Kokkelink et al. discloses a method including: transmitting light through an input polarization maintaining fiber (32) to a multifaceted prism (14,16); and focusing portions of the light to at least two output polarization maintaining fibers (44,46). See Fig. 1-3 and their respective portions of the specification. The drawings appear to show that the angle of incidence is approximately 0 degrees.

3. Claims 4-6 and 20-22 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,546,165 to Yoon et al.

Referring to claims 4-6, Yoon et al. discloses all the limitations of the claimed invention. Yoon et al. discloses a polarization based optical splitter that includes: an input polarization maintaining fiber (34); at least two output polarization maintaining fibers (30,32); a multifaceted glass prism (12) with anti-reflection coatings; lenses (24,26) positioned between the prism and the output fibers. See figures of the reference along with the disclosure within col. 17 lines 38-58, and col. 19 line 40 through col. 20 line 6.

Referring to claims 20-22, Yoon et al. discloses all the limitations of the claimed invention. Yoon et al. discloses a polarization based optical splitter that includes: an input polarization maintaining fiber (34); at least two output polarization maintaining

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fibers (30,32); a multifaceted glass prism (12) with anti-reflection coatings; lenses (24,26) positioned between the prism and the output fibers. See figures of the reference along with the disclosure within col. 17 lines 38-58, and col. 19 line 40 through col. 20 line 6. The drawings appear to show that the angle of incidence is approximately 0 degrees.

4. Claims 23-26, 28, 50 and 51 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 5,740,288 to Pan et al.

Referring to claims 23-26 and 28, Pan et al. discloses all the limitations of the claimed invention. Pan et al. discloses a polarization based optical splitter that includes: an input polarization maintaining fiber (10); at least two output polarization maintaining fibers (12,14); a multifaceted glass prism (21,22); GRIN lenses (13,15) positioned between the prism and the output fibers; and a lens (11) positioned between the input fiber and the prisms to collimate the input light signal. See Fig. 1, along with its respective portion of the specification.

Referring to claims 50 and 51, Pan et al. discloses all the limitations of the claimed invention. Pan et al. discloses a method of coupling a light signal including: transmitting a light signal from an input fiber (10) to a multifaceted glass prism (21,22); focusing the selective proportions of the light signal from the prism to at least two respective polarization maintaining output fibers (12,14); where the proportion of the input light signal being coupled to each of the output optical fibers is variable. See Fig. 1, along with its respective portion of the specification.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,740,288 to Pan et al. in view of U.S. Patent Publication No. 2002/0126945 to Konishi et al.

Referring to claim 29, Pan et al. discloses all the limitations of the claimed invention, except Pan et al. does not appear to disclose that the prism is coated with an anti-reflection coating. Konishi et al. discloses that it is known within the art to coat an optical component with an anti-reflection coating for the purpose of maximizing the amount of incident light entering and passing through the optical component, by minimizing the losses due to reflection. See paragraph [0083] of the reference. Since Pan et al. and Konishi et al. are both from the same field of endeavor, the purpose of Konishi et al. would have been recognized within the pertinent art of Pan et al. It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize an anti-reflective coating on the prisms of Pan et al., for the purpose of minimizing the unwanted optical losses due to back reflection.

Referring to claim 30, Pan et al. in view of Konishi et al. disclose all the limitations of the claimed invention, except neither reference appears to disclose the use of a dielectric material as the anti-reflective coating. It would have been obvious to

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one having ordinary skill in the art at the time the invention was made to utilize a dielectric material as an anti-reflective layer, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

7. Claim 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,740,288 to Pan et al.

Referring to claim 31, Pan et al. disclose all the limitations of the claimed invention, except it does not appear to disclose that the prism is made of glass. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the prism from a glass material, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Allowable Subject Matter

8. Claims 7-14, 33-41, 44-46 and 53-57 are allowed.

9. Claims 27, 32 and 52 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

Referring to claim 7-14, the prior art does not disclose an optical coupler that includes the combination of all the limitations as claimed. Specifically, the prior art does

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not disclose that the polarization dependent loss of the coupler being less than about 0.05 dB.

Referring to claim 27, the prior art does not disclose an optical coupler that includes the combination of all the limitations as claimed. Specifically, the prior art does not disclose that the prism is moved in a plane orthogonal to the optical axis of the prism to vary the proportion of the light signal being sent to each output fiber.

Referring to claim 32, the prior art does not disclose an optical coupler that includes the combination of all the limitations as claimed. Specifically, the prior art does not disclose that the polarization dependent loss of the coupler being less than about 0.01 dB.

Referring to claim 33, the prior art does not disclose an optical coupler that includes the combination of all the limitations as claimed. Specifically, the prior art does not disclose that the polarization dependent loss of the coupler being less than about 0.05 dB.

Referring to claims 34-41 and 54-57, the prior art does not disclose an optical coupler that includes the combination of all the limitations as claimed. Specifically, the prior art does not disclose a polarization scrambler that randomly changes the polarization state of an input signal and one of the two output optical fibers being a tap line that is fed to a control circuit which provides feedback signals to an attenuator.

Referring to claims 44-46, the prior art does not disclose a method of coupling a light signal includes the combination of all the limitations as claimed. Specifically, the

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prior art does not disclose that the polarization dependent loss of the coupler being less than about 0.05 dB.

Referring to claim 52, the prior art does not disclose a method that includes the combination of all the limitations as claimed. Specifically, the prior art does not disclose that the prism is moved in a plane orthogonal to the optical axis of the prism to vary the proportion of the light signal being sent to each output fiber.

Referring to claim 53, the prior art does not disclose a method of coupling a light signal includes the combination of all the limitations as claimed. Specifically, the prior art does not disclose that the polarization dependent loss of the coupler being less than about 0.05 dB.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin S Wood whose telephone number is (703) 605-5296. The examiner can normally be reached on Monday-Thursday (7am - 5:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney B Bovernick can be reached on (703) 308-4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 307-0956.

KSW
June 5, 2003


Brian Healy
Primary Examiner